

REMARKS

The Specification has been amended to correct an informality. Claims 35
5 and 43 have been amended to address Examiner's concerns under §102, and
§112. Claim 44 has been added. Claims 35-44 remain in the application. Fig. 4
has been corrected as suggested by the Examiner. A marked up version of
changes is found in Appendix A. Further examination and reconsideration of the
application, as amended, is hereby requested.

10 In Section 2 of the Office Action, the Examiner objected to the drawings
because in Fig. 4 "YES" at block "56" should be "NO". In response to this
objection, Applicant is submitting herewith a proposed drawing correction to Fig.
4. Approval of this drawing correction is respectfully requested.

15 In Section 3 of the Office Action, claims 42 and 43 were rejected under 35
~~USC § 112, second paragraph as being indefinite for failing to particularly point~~
out and distinctly claim the subject matter which Applicant regards as the
invention. Specifically, the Examiner questioned how the steps of "issuing ..." and
20 "evacuating ..." in claim 42 are different from the steps of "injecting ..." and
"withdrawing ..." in claim 43, respectively. Applicant respectfully traverses this
rejection. Claim 42 is directed to a method of "regulating pressure in a print
cartridge" and Claim 43 is directed to a method of "recharging a print cartridge
having the method for regulating pressure as in claim 42". In claim 42, "issuing ..."
25 is a step for controlling the fluid flow into the cartridge based on sensed pressure
within the local reservoir. In claim 43, "injecting ..." is a step of inserting fluid into a
fluid source within the print cartridge such as described in the specification for Fig.
10 on page 16, lines 8-15 using syringe 134. Similarly, in claim 42, the step of
"evacuating ..." is a step of evacuating air from the local reservoir when the
30 pressure sensed is more than a second predetermined limit. In claim 43, the step
of "withdrawing ..." is in regard to removing air from the vacuum reservoir 120

Also the Examiner states that in claim 43 "the print cartridge" in lines 3 and 4 lack antecedent basis. Claim 43 has been amended to indicate that the print cartridge referred to is that in the preamble of claim 42. Accordingly, withdrawal of the rejection under 35 USC 112 is respectfully requested for claims 42 and 43.

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In Section 4 of the Office Action, the Examiner rejected claims 35 and 38-41 under 35 USC 102(b) as being anticipated by Boyd et al.

In regard to claim 35, Applicant has amended claim 35 to more particularly define and distinguish Applicant's invention over the art made of record. Claim 35, as amended, now claims "activating a second flow valve *in parallel with said first flow valve to a fluid source.*" This limitation is not disclosed, taught or suggested by Boyd alone or in combination with the art made of record. In Boyd, the backup valve 18 is in series with the throttling valve 38 as seen in Figs. 1-6 of Boyd and as discussed as prior art by the Applicant in regards to Applicant's Fig. 1. Conversely, Applicant's claimed invention has the first valve and the second valve in parallel to a fluid source as seen in Applicant's Figs. 2, 3, 6A-C, 8A-D, 9, 10 and 11 and discussed throughout the specification and in particular on page 17, line 30. By having the two valves in parallel, a staged flow of fluid of at least two flow rates is available into the print cartridge. (See Applicant's summary). Accordingly, claim 35, as amended, is not anticipated by Boyd.

In regard to claims 38-41, Applicant respectfully traverses the Examiner's assertion that claims 38-41 are anticipated by Boyd. As noted previously, Boyd discloses a backup valve 18 that is in fluidic series with the throttling valve 38 as seen in Figs. 1-6 of Boyd. Claim 38 is a method claim that has the limitation of "issuing a first flow of fluid into the *local reservoir* from the fluid source when the pressure is less than a first predetermined limit". This step is similar to that performed by the throttling valve 38 of Boyd. However, claim 38 has the additional step of "issuing a second flow of fluid into the local reservoir from the fluid source when the pressure is less than a second predetermined limit." Conversely, Boyd's backup valve 18 issues a second flow of fluid into the "intermediate chamber 51" (and not the "local reservoir" as Applicant is claiming) when the pressure is less than a second predetermined limit. Accordingly, Boyd does not disclose, teach, or suggest Applicant's steps of issuing a first and second

Claims 39, 40 and 41 depend on claim 38 and are deemed patentable based at least on the patentability of claim 38. In addition, for claim 39, Boyd does not disclose Applicant's claimed step of "evacuating air from the local reservoir when the pressure is more than a *third* predetermined limit." In Boyd, the throttling valve 38 operates in response to a first predetermined limit and the backup valve 18 in response to a second predetermined limit. However, Boyd does not disclose how the throttling valve 38 or backup valve 18 responds to a "third" predetermined limit to evacuate air from the local reservoir. The Examiner asserts that via 47 of Boyd evacuates air from the local reservoir when the pressure is more than a third predetermined limit. Applicant respectfully traverses the Examiner's statement. Via 47 is not controlled but continuously open to maintain the interior of the bag at atmospheric pressure (col. 3, lines 58-61). Therefore, via 47 cannot evacuate air from the local reservoir when the pressure is more than a third predetermined limit as it is continuously open to the air external to the print cartridge. Accordingly, Boyd does not anticipate Applicant's claim 39.

Also in Section 4 of the Office Action, the Examiner rejected claims 37, 42, and 43 under 35 USC 102(b) as being anticipated by Boyd. Applicant respectfully traverses the Examiner's rejection. In particular for claim 37, the Examiner asserts that Boyd's back up valve 18 is equivalent to Applicant's claimed vacuum valve. However, Applicant is claims the step of "*activating* a vacuum valve if the pressure is *more* than a second predetermined limit" and "*deactivating* the vacuum valve if the pressure is *not more* than a second predetermined limit." In the specification, the Applicant discloses that activating is equivalent to opening the vacuum valve and deactivating is equivalent to closing the vacuum valve (see page 9, lines 14-19). Conversely, Boyd discloses that the back up valve 18 "remains open" (i.e. activated) when the pressure is "less" (not "more" as Applicant is claiming) than a second predetermined limit (see Col. 4, line 58 through Col. 5, line 17). In Boyd, the back up valve remains activated until the pressure within the housing is less than about atmospheric pressure (the second predetermined limit) and then deactivated or closed to prevent pressure that is higher than atmospheric pressure from causing the ink within to be pushed out the printhead. Therefore, Boyd's back up valve's operation does not disclose, teach,

Similarly for claim 42, the step of "evacuating *air* from the local reservoir when the pressure is *more* than a second predetermined limit" is not disclosed by Boyd. Boyd discloses not evacuating air but evacuating "fluid" (such as the ink) when the pressure is "less" than a second predetermined limit (about atmospheric pressure). Furthermore, when the pressure in the local reservoir of Boyd is
5 "more" than the atmospheric pressure, the back up valve 18 is closed (see Figs. 3 and 6) thereby preventing both fluid and/or air from being evacuated. Accordingly, Applicants claim 42 is not disclosed, taught or suggested by Boyd.

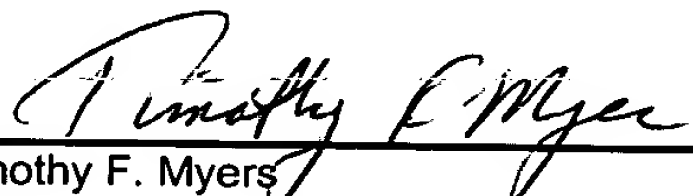
For claim 43, dependent claim 43 depends on independent claim 42. Boyd
10 does not disclose a method of recharging the print cartridge (as previously discussed for §112 above) having the method of regulating pressure as in claim 42 since Boyd does not disclose, teach, or suggest Applicant's method of regulating pressure as previously discussed for claim 42.

Accordingly, withdrawal of the rejection under 35 USC 102(b) for claims 35,
15 37, and 38-43 and allowance of these claims is respectfully requested.

~~In Section 5 of the Office action, the Examiner objected to claim 36 (claim~~
46 is assumed a typo) as being dependent upon a rejected base claim but that it
would be allowable if rewritten in independent form to include all the limitations of
20 the base claim. Applicant respectfully thanks the Examiner for allowance of this
claim. According claim 44 has been added to combine the limitations of claims 35
and 36. Claim 44 is believed patentable and allowance of claim 44 is respectfully
requested. Claim 36 has not be cancelled but retained as claim 35 has been
amended to incorporate an additional limitation. Claim 36 is believe patentable at
25 least based on the patentability of claim 35, as amended and allowance of claim
35 is respectfully requested.

Applicant believes his claims as amended are patentable over the art of record, and that the amendments made herein are within the scope of a search properly conducted under the provisions of MPEP 904.02. Accordingly, claims 35-44 are deemed to be in condition for allowance, and such allowance is
5 respectfully requested.


I hereby certify that this correspondence is being deposited with the United States Postal Service on 4/10/02, as first class mail in an envelope addressed to:
Assistant Commissioner for Patents,
Washington, DC 20231.



Timothy F. Myers
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Appendix A
Marked Up Version of Changes

In the Specification:

- 5 Please replace the paragraph starting on page 9, line 8:

Fig. 4 illustrates an exemplary process for controlling the back-pressure within the local reservoir 34 of the print cartridge block diagram of Fig. 3. In this example, a desired predetermined back-pressure range from -2 to -6 inches of water, is assumed. This example also assumes that when the back-pressure reaches a pressure of -1 inch of water that enough air has accumulated in the local reservoir 34 such that it needs to be evacuated to prevent drooling of fluid from the printhead 36. The process would start by using the pressure sensor 32 to sense the back-pressure in block 50. In decision block 51, the back-pressure is checked to determine if it is greater than -1 inch of water. If so, then the vacuum valve is activated in block 54 to allow the air accumulated in the local reservoir to be drawn into the vacuum reservoir, thus lowering the back-pressure. The process then returns to block 50. In decision block 51, if the back-pressure is less than -1 inch of water, then in block 52 the vacuum valve 42 is deactivated to prevent any further air or fluid from reaching the vacuum reservoir 44. In block 56, the pressure is checked to determine if it is less than -2 inches of water. If it is not then the first regulator valve [38]40 is deactivated in block 58 to prevent fluid from the fluid inlet 26 from entering the local reservoir and increasing the pressure. The process would then return to block 50. In block 56, if the pressure is less than -2 inches of water, then in block 60, the first regulator valve 40 is activated to allow fluid to flow into the local reservoir 34 from fluid inlet 26 thus raising the pressure within local reservoir 34. If the printhead is expelling fluid at a volumetric rate greater than the fluid entering the first regulator valve 40, however, the amount of fluid within local reservoir 34 will decrease, and the pressure inside it will continue to drop. In decision block 62, the pressure is checked to determine if the maximum negative pressure of -6 inches of water is reached. If it has not been reached, then the second regulator valve 38 is deactivated in block 64 and the process returns to block 50. If the maximum negative pressure of -6 inches of water has been reached, then in block 66, the second regulator valve 38 is

activated to increase the flow of fluid into the local reservoir 34. The process then returns to sensing the back-pressure in block 50. By performing these steps, the back-pressure within local reservoir 34 can be maintained within an exemplary tight range of -2 to -6 inches of water. If the air released from the fluid in local reservoir 34 over time causes the minimum negative pressure to increase from -2 to -1 inches of water, then the vacuum valve will be activated to expel the air inside local reservoir 34 so as to prevent the back-pressure from getting higher than -1 inches of water. This pressure value of -1 inches of water will prevent the drooling of fluid from the printhead 36.

In the Claims:

35. (Amended) A method for regulating pressure in a print cartridge, comprising the steps of:

- sensing the pressure;
- activating a first flow valve when the pressure is less than a first predetermined limit;
- deactivating the first flow valve when the pressure is not less than the first predetermined limit;
- activating a second flow valve in parallel with said first flow valve to a fluid source when the pressure is less than a second predetermined limit; and
- deactivating the second flow valve when the pressure is not less than the second predetermined limit.

43. (Amended) A method for recharging [a]the print cartridge having the method for regulating pressure as in claim 42, the method comprising the steps of: injecting fluid into a fluid source within the print cartridge; and withdrawing air from a vacuum reservoir within the print cartridge.